molecule. This work which is now being carried on by Waldschmidt-Leitz and other pupils of Willstätter gives promise of great success in this complicated field. The fact that pepsin causes true hydrolytic decomposition and not merely a physical degradation, and that the diketopiperazines, cyclic structures derived from amino-acids, are not attacked by proteolytic enzymes, brings us back to the old conception of the protein molecule consisting of great polypeptide chains. The number of possible linkages by which they might be united is enormous, and we can now only hope for the development of a general theory and not for a detailed knowledge of the structure of the proteins. The study of their colloidal behavior which was inaugurated by Jacques Loeb in this country promises to be of great value in the further development of biochemical research.

From birth to death the life of man is dependent upon biochemical reactions. They take part in the supply and preparation of his food and aid him in its digestion. Cooking and baking, preserving fruit and salting meat, the making of cheese and sour milk, all involve biochemical changes. The process of retting flax and hemp, which are so essential for our clothing, the fermentation of tobacco, which contributes so greatly to the happiness of many, are biochemical reactions. Fermentation processes are involved in the preparation of natural fertilizers, without which an intensive form of agriculture is impossible. Most of the problems of agriculture which have been studied with such great success in the various experimental stations in this country are directly related to biochemistry. The connection between the formation of humus in the soil and the decomposition of its content of micro-organisms, as investigated by Waksman in New Brunswick, is of great interest.

Biochemical principles underlie the purification of our water supply and the destruction of refuse. They enter very largely into the field of medicine and furnish us with many methods for the curing of disease. But great as is their importance, our knowledge in this field is small.

The biochemical reactions of the life processes are extremely complex, and as yet we understand only vaguely the general laws which govern them. We have ascertained many separate and apparently unrelated facts, but we are still unable to make predictions that are based upon mathematical laws. At the present time physical science seems to offer greater attractions to the investigator because of the opportunities that it affords for study of the basic laws of the phenomena of nature.

Nobody can nowadays achieve any great discovery in biochemistry through purely theoretical deduction; important advances can be obtained solely by exhaustive experimental research. And only those heroes of our science who are willing to withdraw their minds from most other interests of human life can hope to accomplish really great results.

Every young student who cherishes the hope of being able at some future time to make a worthy contribution to our knowledge of biochemistry, whether it be of theoretical or practical importance, will have to choose one of two courses that are open to him. He may, and most probably will, follow the general line of development and become a useful but routine chemist, or he may, imbued with higher aspiration, enter upon a road of his own into the dark wilderness of research. His path at the beginning may be strewn with thorns, he may meet with disappointment and discouragement, but in the end he may pick from the tree of knowledge a fruit that is far sweeter than any that he may otherwise have tasted. Let us hope that many of the younger scientists in this audience may be carried forward by their enthusiasm along this road.

HANS PRINGSHEIM

ITHACA, N. Y.

THE THIRTEENTH INTERNATIONAL PHYSIOLOGICAL CONGRESS

THE Thirteenth International Physiological Congress is to be held at the Harvard Medical School in Boston, August 19 to 23, 1929. This, the first meeting of this body to be held in America, promises to be of great interest to American physiologists. It comes just forty years after the first congress met in Basel in 1889. In that the tradition of these congresses was in large part determined by a letter sent out from the office of the Physiological Society in London, as a result of which the first congress convened, it seems appropriate to reprint that letter at this time.

Physiological Society, London.
19th March, 1888.

Sir,

It is suggested that International Meetings of Physiologists should be held at intervals, with the object of promoting the progress of Physiology by the interchange of ideas and mutual friendly criticism, and of affording opportunities to workers in our science of knowing each other personally.

It is proposed to include in the subjects to be brought before such a Meeting only those branches of Anatomy, Histology, Physics and Chemistry which directly bear upon Physiology. With the ample opportunities already existing for the publication of Physiological Papers, it appears unnecessary to provide for printing separately the Transactions of the Meetings. It is intended that all

communications should be as little formal and as fully demonstrative and experimental as possible.

In choosing the place for the first Congress, it has been thought that Switzerland, from its central situation between the most important European States, from the familiarity with it enjoyed by Americans and Englishmen, and from the attractiveness of its scenery, offers the greatest advantages. Should this prove to be the general opinion, we have reason to believe that we should be welcomed in the Swiss capital, where there are ample facilities for meeting and for conducting experimental demonstrations.

The time suggested as most convenient is the end of August, or the beginning of September, in 1889.

We beg leave to commend this proposal to your favourable consideration, and shall feel much obliged if you will kindly communicate to the Honorary Secretary of our Society your views upon the advisability of the plan and upon the place and time proposed. Such meetings can only be made successful by the united help of physiologists in all countries, and it is to ascertain how far we may depend upon your valued co-operation, that we have the honour to address to you this preliminary letter.

We are, Sir,

Your faithful servants,

[Signed] J. Burdon Sanderson (Oxford); Michael Foster (Cambridge); Wm. Rutherford (Edinburgh); J. G. McKendrick (Glasgow); J. M. Purser (Dublin); E. A. Schäfer (London); W. H. Gaskell (Cambridge), Hon. Treas. Physiol. Soc.; Gerald F. Yeo (King's College, London), Hon. Sec. Physiol. Soc.

The plan outlined in this letter was carried out. Those who signed it and many of those who took part in the first and the ensuing congresses are connected with great advances in physiology. Meetings have been held every three years in various European cities. The presidents under whom these gatherings have been held, and the places of assembly, were as follows:

DATE	PLACE	PRESIDENT
1889	Basel	J. Holmgren
1892	Liége	L. Fredericq
1895	Bern	H. Kronecker
1898	Cambridge	Sir Michael Foster
1901	Turin	A. Mosso
1904	Brussels	P. Heger
1907	Heidelberg	A. Kossel
1910	Vienna	S. Exner
1913	Groningen	H. J. Hamburger
1920	Paris	Ch. Richet
1923	Edinburgh	Sir Edward Sharpey Schäfer
1926	Stockholm	J. Johansson

The regularity with which the International Physiological Congress has been held, since its first meeting in 1889, has been interrupted only once. In 1913 the congress met in Groningen, where 443 members were enrolled, representing 19 different nationalities. From 1914 to 1918 the war made these meetings impossible, but in 1920 the French arranged a congress in Paris to which physiologists from allied and neutral nations were invited. At the Edinburgh Congress three years later the Central Powers were well represented, and the original international character of the congress was entirely reestablished at the Stockholm meeting.

Nineteen nationalities were represented at the Paris Congress, twenty-seven at Edinburgh and thirty-three at Stockholm. The number of members of different nationalities reading papers at Paris, Edinburgh and Stockholm may be seen in the accompanying table:

TABLE I

Nationalities	Number of members reading papers Paris 1920	Edinburgh 1923	Stockholm 1926
Argentine	1	.....	.....
Austrian	.....	3	8
Belgian	2	3	8
Canadian	1	7	2
Chinese	.....	.....	2
Czechoslovakian	.....	1	1
Danish	2	.....	9
Dutch	11	20	15
Egyptian	1	.....	1
English	11	54	20
Esthonian	.....	1	.....
Finnish	.....	.....	2
French	39	3	30
Georgian	.....	1	.....
German	.....	18	40
Hungarian	.....	.....	3
Italian	20	4	4
Japanese	.....	1	3
Norwegian	.....	.....	1
Polish	1	.....	8
Portuguese	2	.....	.....
Rumanian	2	.....	3
Russian	.....	2	8
Serbian	.....	.....	1
Spanish	3	.....	3
Swedish	5	3	20
Swiss	5	4	1
U. S. A.	8	34	45
Total number of members reading papers	114	159	238
Total number of members enrolled in the Congress	.....	408	651

The number of members at each congress has of course always greatly exceeded the number giving papers, but the table has been arranged on the latter basis since this gives a fairer picture of the diverse sources of the scientific contributions. Several na-

tionalities were represented by members who took no active part in the scientific program.

At the last meeting, in Stockholm, the congress unanimously voted to accept the invitation of the American Physiological Society and meet in the United States of America in 1929. The Physiological Society invited the Federation of American Societies for Experimental Biology, with which it is affiliated, to share with it the honor of being host to the international congress. At the meeting of the federation at Rochester in April, 1927, the following committee, representing the constituent societies in the federation, was appointed: Professors John J. Abel, Wade H. Brown, Joseph Erlanger, William H. Howell, Reid Hunt, Graham Lusk, J. J. R. Macleod, Lafayette B. Mendel, Phillip A. Shaffer, Torald Sollman, Donald D. Van Slyke, Alfred S. Warthin and Carl Voegtlin. A subcommittee consisting of Professors Frederic S. Lee, Graham Lusk and Dr. Simon Flexner undertook to raise the necessary funds for the congress.

William H. Howell, of the Johns Hopkins University, was chosen president of the congress, Boston was selected as the place to hold the meeting, and Walter B. Cannon, of Harvard University, was appointed chairman of a bureau to have charge of all arrangements. Drs. Edwin J. Cohn and Alfred C. Redfield were appointed the secretaries of the congress. Membership in the congress will be limited to members of the Federation of American Societies for Experimental Biology and to properly accredited scientists from abroad. Other Americans interested in the physiological sciences may attend the scientific sessions as associate members upon introduction by a member of the federation.

The announcements of the congress have been sent to foreign physiologists who have been members of past international congresses or who are members of learned societies interested in the science of physiology. European interest in the congress has been so great that as early as the Harvey celebration in London last May ways and means of coming to America were discussed by the delegates assembled from different European countries. In this connection, Professor A. V. Hill, of University College, London, has arranged to have 300 reservations held on the *SS. Minnekahda,* sailing from London August 9 and from Boulogne August 10. On this voyage the *Minnekahda* will proceed directly to Boston where she is due on Sunday, August 18, the day before the congress opens.

During the week of the congress, members and their families will be lodged in the dormitories of Harvard University, and members from abroad will be the guests of the Federation of American Societies for Experimental Biology. The scientific sessions of the congress will be held at the Medical School of Harvard University.

Following the scientific sessions in Boston, members from abroad and their families will be given an opportunity to visit the Marine Biological Laboratory at Woods Hole. During the following week arrangements will be made for them to visit scientific institutions and other points of interest in and around New York City. A day's excursion will be made to visit Yale University. Throughout this week the foreign physiologists and their families will live in the dormitories of Columbia University as the guests of the federation. The New York visit will be concluded on Saturday morning, August 31, so that members who so desire may sail for European ports on that day.

In that the International Psychological Congress will be held in New Haven from September 1 to 7, physiologists who are also interested in this congress can readily attend it after the visit to New York.

A week's tour is being arranged for members from abroad who desire to spend a short period of time in travel in America. The party will leave New York on Saturday, August 31, and will go by steamer up the Hudson River to Albany, thence by railway to Niagara Falls and Toronto. After visiting the University of Toronto the party will proceed by boat on Lake Ontario and the St. Lawrence River, passing through the Lachine rapids. The trip will terminate at Montreal. While in Montreal, McGill University will extend certain courtesies to those making the trip. It is expected that members of the party will return to Europe by the St. Lawrence route, or certain of them may prefer to return to New York or visit other places in the United States.

It is hoped that the Boston congress will be signalized by just as free an exchange of scientific ideas between physiologists of different nations as has characterized these meetings in the past, and continue to fulfil the aims voiced by Sir Michael Foster in a letter to Professor Kronecker, "to do our best to make it as informal as possible, so that we may freely and without reserve exchange opinions."

THOMAS CHROWDER CHAMBERLIN—TEACHER, ADMINISTRATOR, GEOLOGIST, PHILOSOPHER

IN the passing of Dr. Chamberlin America has lost her greatest geologist and the world one of its boldest thinkers. Since Charles Lyell no one has so greatly changed the fundamental conceptions in earth science. By the force of his intellect he reached unquestioned leadership in philosophical geology, carrying his study of the earth over into celestial physics, and radically